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Presentations at Conferences Sponsored by the American Geophysical Union
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Invited Technical Conference Presentations

- I100. Mlynczak, M. G., CEDAR Prize Lecture 2021,
- I99. Mlynczak, M. G., Middle atmosphere observations from space: Past, Present, and Future, COSPAR 2020, Sydney, Australia, **Invited**.
- I98. Mlynczak, M. G., Calibration and long-term climate data records, Calibration Conference (CALCON), Logan, UT, 2020. **CALCON Invited Speaker**.
- I97. Mlynczak, M. G. et al., Continuity of Earth Radiation Budget Measurements from Space, Workshop on SI-Traceable, Space-based Climate Observing Systems, London, UK, September, 2019. **Invited Keynote**.
- I96. Mlynczak, M. G., et al., Infrared radiation in the thermosphere from 1947 to 2019, Space Climate Symposium, Orford, Canada, July 2019. **Invited**.
- I95. Mlynczak, M. G., et al., Infrared radiation in the thermosphere from 1947 to 2019, The Plasma Physics of the Magnetosphere Conference, Bra-Pollenzo, Italy, June 2019, **Invited**.
- I94. Mlynczak, M. G., et al., Frontiers in satellite observation of the mesosphere and thermosphere, SCOSTEP Quadrennial Symposium, Toronto, Canada, July 2018, **Invited**.
- I93. Mlynczak, M. G., et al., Response of the ITM System to Solar and Geomagnetic Forcing, Asia-Oceania Geophysical Society (AOGS) 15th Annual Meeting, Honolulu, HI, June, 2018, **Invited**.
- I92. Mlynczak, M. G., et al., Space-Based Sentinels for Measurement of Infrared Cooling in the Thermosphere for Improved Space Weather Forecasting, Triennial Earth-Sun Summit (TESS), Lansdowne, MD, June, 2018, **Invited**.
- I91. Mlynczak, M. G., et al., Magnetosphere-Thermosphere and Solar-Terrestrial Coupling Diagnosed by Analysis of Infrared Radiative Cooling from SABER, Birkeland Center for Space Sciences 10th Workshop, Bergen, Norway, April 2018, **Invited**.
- I90. Mlynczak, M. G., et al., Molecular Spectroscopy and Radiative Forcing of Climate, American Physical Society Annual Meeting, Los Angeles, CA, 2018, **Invited**.

- I89. Mlynczak, M. G., et al., Magnetosphere-Thermosphere and Solar-Terrestrial Coupling Diagnosed by Analysis of Infrared Radiative Cooling from SABER, The Magnetosphere: New Tools, New Thinking, New Results, Puerto Varas, Chile, 2017, **Invited**.
- I88. Mlynczak, M. G., Observing climate change from Earth's surface to the edge of Space, The Characterization and Radiometric Calibration for Remote Sensing (CALCON) Annual Meeting, Logan, Utah, 2017, <https://calcon.sdl.usu.edu/technical-program/workshop>, **Invited**.
- I87. Knipp, D. J., et al., Nitric Oxide: How the thermosphere fights back during intense storms, CEDAR Prize Lecture, 2017 CEDAR Meeting, Keystone, Colorado, 2017, **Invited**.
- I86. Knipp, D. J., et al., Thermospheric response to shock-led storms, Joint meeting of the Japan Geophysical Union and American Geophysical Union, Chiba, Japan, 2017, **Invited**.
- I85. Mlynczak, M. G., et al., Observations of the thermal structure, composition, and energy budget of the mesosphere and thermosphere from 15 years of data from SABER, Joint meeting of the Japan Geophysical Union and American Geophysical Union, Chiba, Japan, 2017, **Invited**.
- I84. Wielicki, B. A., et al., Economic value of Narrowing the Uncertainty in Climate Sensitivity: Decadal Change in Shortwave Cloud Forcing and Low Cloud Feedback, Fall Meeting, American Geophysical Union, San Francisco, CA, 2016, **Invited**.
- I83. Knipp, D. J., et al., The Thermosphere Fights Back: Sources of Nitric Oxide Overcooling During Geomagnetic Storms, Fall Meeting, American Geophysical Union, San Francisco, CA, 2016, **Invited**.
- I82. Mlynczak, M. G., L. A. Hunt, and V. Airapetian, Earth's Thermospheric Response to CME and SEP events: Implications for terrestrial type exoplanets around K-M dwarfs, Impact of Exoplanetary Space Weather on Climate and Habitability "Workshop without Walls", New Orleans, LA, 2016, **Invited**.
- I81. Mlynczak, M. G., Observations of natural variability and trends in the upper atmosphere, 2016 Trend Workshop, Kuhlungsborn, Germany, 2016, **Invited**.
- I80. Mlynczak, M. G., Infrared radiation in the thermosphere over the past 15 years: Implications for Space Weather and Space Climate, ISROSES-3, Varna, Bulgaria, September, 2016, **Invited**.
- I79. Mlynczak, M. G., Are different solar cycles really that much different? VarSITI workshop, Albena, Bulgaria, June, 2016, **Invited**.
- I78. Mlynczak, M. G., Solar induced variability in the upper atmosphere over the past 70 years, Space Climate Workshop 6, Levi, Finland, April 2016, **Invited**.

- I77. Mlynczak, M. G., et al., Observations of solar induced variability in the thermosphere and mesosphere over the past 14 years – and longer!, International Living with a Star Workshop, Goa, India, 2016, **Invited**.
- I76. Mlynczak, M. G., et al., Energetics of the thermosphere in polar regions observed by SABER, Fall Meeting, American Geophysical Union, San Francisco, CA, 2015, **Invited**.
- I75. Mlynczak, M. G., et al., Infrared response of the thermosphere-ionosphere to geomagnetic storms, Fall Meeting, American Geophysical Union, San Francisco, CA, 2015, **Invited**.
- I74. Wielicki, B. A., et al., Climate Change Accuracy: Observing Requirements and Economic Value, Sun-Climate workshop, 2015, **Invited**.
- I73. Mlynczak, M. G., et al., Observations of radiative cooling by nitric oxide and carbon dioxide in the E and F regions: Implications for space weather and space climate, Fall Meeting, American Geophysical Union, San Francisco, CA, 2014, **Invited**.
- I72. Mlynczak, M. G. et al., Solar Variability and the Ionosphere-Thermosphere-Mesosphere System, Workshop on future of Space Weather, Jet Propulsion Laboratory, Pasadena, California, October, 2014, **Invited**.
- I71. Mlynczak, M. G. et al., Variability of the Sun and its impact on the ITM system, SCOSTEP 13th Quadrennial Solar-Terrestrial Physics Symposium, Xian, China, 2014, **Invited**.
- I70. Mlynczak, M. G., Observations of the temperature, composition, and energy balance of the MLTI system: Natural variability and Trend Detection, 8th Workshop on Long Term Changes and Trends in the Atmosphere, Cambridge, UK, 2014, **Invited**.
- I69. Mlynczak, M. G., Variability of the thermal structure, composition, and energy balance of the mesosphere and thermosphere and influence of energetic particles as revealed by SABER, HEPPA/SOLARIS Workshop, Baden-Baden, Germany, 2014, **Invited**.
- I68. Mlynczak, M. G., SABER: Observing the pulse of the Sun in the Atmosphere of the Earth, AGU Chapman Conference on Solar Minimum, Key Largo, FL, 2013. **Invited**.
- I67. Tsurutani, B., K. Shibata, E. Echer, A. Mannucci, O. P. Verkhoglyadova, and M. G. Mlynczak, The March 7-18 2012 CAWSES-SCOSTEP Interplanetary Events and Their Magnetospheric and Ionospheric Effects, Fall AGU Meeting, San Francisco, CA, 2012. **Invited**.
- I66. Mlynczak, M. G., Observations of the mesosphere and thermosphere over a complete solar cycle, TREND 2012 Workshop, Buenos Aires, Argentina, September, 2012, **Invited**.
- I65. Mlynczak, M. G., Glenn Diskin, Glen Sachse, Christopher Mertens, Erik Syrtstad, Liying Qian, and Stan Solomon, Measurement of CO₂ in the Mesosphere and Lower

Thermosphere, Next Generation Suborbital Researchers Conference, Palo Alto, CA, February 2012, **Invited**.

- I64. Mlynczak, M. G., et al., Energy Balance in the Mesosphere and Lower Thermosphere as Revealed by SABER, SEE, and SORCE, Fall AGU 2011, San Francisco, CA, **Invited**.
- I63. Russell, J. M., and M. Mlynczak, Scientific Results from the SABER experiment on the TIMED satellite, Fall AGU 2011, San Francisco, CA, **Invited**.
- I62. Mlynczak, M. G., Observations of the far-IR spectrum from the ground, air, and space, Far-Infrared Workshop, November 2011, Madison, WI, **Invited**.
- I61. Mlynczak, M. G., Thermospheric and Mesospheric response to particle precipitation, High Energy Particle Precipitation in the Atmosphere Workshop, May 2011, Granada, Spain, **Invited**.
- I60. Mlynczak, M. G., Observations of far-infrared greenhouse effect at the ends of the Earth, Hyperspectral Imaging and Sensing of the Environment conference, Optical Society of America, July 2011, Toronto, CA, **Invited**.
- I59. Mlynczak, M. G., Science, Measurement, and Technology Requirements for the Infrared CLARREO Climate Benchmark Mission, Optical Society of America Topical Meeting on Fourier Transform Spectroscopy 2011, Toronto, Canada, **Invited**
- I58. Talaat, E. R., G. Crowley; D. R. Marsh; H. Liu; M. G. Mlynczak; J. Russell, Water vapor and odd hydrogen in the middle and upper atmosphere: an overview of current observations and modeling, Fall AGU 2010, **Invited**.
- I57. Mlynczak, M. G., D. F. Young; B. A. Wielicki; Y. Huang; S. S. Leroy; D. Feldman; W. Collins, Evaluating Climate Models with CLARREO, Fall AGU 2010. **Invited**.
- I56. Mlynczak, M. G., Earth's Far-Infrared Spectrum: A frontier in climate science and measurement technology, SPIE Optics and Photonics, San Diego, CA, August 2010, **Invited**.
- I55. Energy balance in the mesosphere and lower thermosphere from 8 years of TIMED/SABER data, SCOSTEP STP-12 Symposium, Berlin, Germany, July 2010, **Invited**.
- I54. Mlynczak, M. G., Natural variability and trends in the energy balance of the thermosphere, 6th IAGA/ICMA/CAWSES Workshop, Boulder, CO, June 2010, **Invited**.
- I53. Mlynczak, M. G., Advanced Technologies for Measurement of Decadal Climate Change from Space, Fall Meeting, American Geophysical Union, San Francisco, CA, December, 2009, **Invited**.

- I52. Mlynczak, M. G., Observations of infrared radiative cooling in the thermosphere on daily to multiyear timescales from the TIMED/SABER instrument, Fall Meeting, American Geophysical Union, San Francisco, CA, December, 2009, **Invited.**
- I51. Mlynczak, M. G., Thermospheric and mesospheric climate response to high energy particle precipitation events, High Energy Particle Precipitation in the Atmosphere (HEPPA) Conference, Boulder, Colorado, October, 2009, **Invited.**
- I50. Mlynczak, M. G., Response of the thermosphere to long- and short-term variations in the Sun's output, Workshop on High Speed Streams, Ambleside, England, September, 2009, **Invited.**
- I49. Thayer, J. P., J. Lei, J. M. Forbes, G. Crowley, M. Mlynczak, and Q. Wu, A new solar-terrestrial connection: Multi-Day oscillations in thermosphere and ionosphere properties, Fall Meeting, American Geophysical Union, San Francisco, CA, 2008, **Invited.**
- I48. Mlynczak, M. G., Remote sensing of the Earth's far-infrared spectrum from space, Hyperspectral Imaging and Sounding of the Environment (HISE) Workshop, Vancouver, BC, April 2009, **Invited.**
- I47. Mlynczak, M. G., Atomic oxygen, atomic hydrogen, and chemical heating rates derived from SABER, COSPAR Symposium, Montreal, CA, July 2008. **Invited.**
- I46. Kozyra, J. U., G. Crowley, R. Doe, M. G. Mlynczak, L. Paxton, W. Skinner, S. Solomon, E. Talaat, T. Woods, Q. Wu, and J. Yee, Overview of TIMED CEDAR observations showing the MLTI system response to changing drivers from solar maximum to solar minimum, Fall Meeting, American Geophysical Union, 2007, **Invited.**
- I45. Mlynczak, M. G., NASA ESTO: Preparing the Future of Earth Science Observation Technology, Fall Meeting, American Geophysical Union, San Francisco, CA, 2007. **Invited.**
- I44. Mlynczak, M. G., Estimates of NO variability and influence on the middle atmosphere as determined from SABER, 24th Meeting, International Union of Geodesy and Geophysics Perugia, Italy, July 2007. **Invited.**
- I43. Mlynczak, M. G., SABER observations of solar cycle influence in the mesosphere and lower thermosphere, 24th Meeting, International Union of Geodesy and Geophysics, Perugia, Italy, July 2007. **Invited.**
- I42. Mlynczak, M. G., The far-infrared spectroscopy of the troposphere experiment, Hyperspectral Imaging and Sensing of the Environment (HISE), Optical Society of America, Santa Fe, NM, February 2007, **Invited.**
- I40. Mlynczak, M. G., 45th Annual AIAA Aerospace Sciences Meeting, Reno, NV, January 2007, **Invited.**

- I41. Mlynczak, M. G., In-situ net flux within the atmosphere of the Earth, Fall Meeting American Geophysical Union, San Francisco, CA, December 2006, **Invited**.
- I39. Mlynczak, M. G., Far-Infrared Spectroscopy of the Troposphere, Achieving Satellite Instrument Calibration for Climate Change (ASIC³) Workshop, Washington, DC, May, 2006, **Invited**.
- I38. Mlynczak, M. G., Energy flow in the Sun-Earth System, Conference on Sun-Earth Connection II, Kona, Hawaii, January 2006, **Invited**.
- I37. Mlynczak, M. G., and the FIRST Science Team, Far-Infrared Spectroscopy of the Troposphere: Description, Performance, and Results, American Geophysical Union Fall Meeting, San Francisco, CA, December, 2005, **Invited**.
- I36. Mlynczak, M. G., Mysteries of the Mesosphere as Resolved by the SABER Experiment, IAGA Symposium, Toulouse, France, July 2005, **Invited**.
- I35. Mlynczak, M. G., and the SABER Team, SABER – An Experiment to Explore and Characterize the Non-LTE Terrestrial Upper Atmosphere, Second International Limb Workshop, Stockholm, Sweden, October, 2004. **Invited**.
- I34. Mlynczak, M. G., and the SABER Team, The heat budget of the mesosphere as revealed by the TIMED mission, 35th Scientific Assembly, COSPAR, Paris, France, July 2004. **Invited**.
- I33. Mlynczak, M. G., Trends in the mesosphere: Detection of change from space, *IAGA/ICMA Workshop on Trends in the Atmosphere*, Sozopol, Bulgaria, June 2004. **Invited**.
- I32. Kozyra, J. U., L. J. Paxton, M. G. Mlynczak, G. Crowley, M. G. Henderson, Periodic Magnetospheric Response & Impacts on Energy Dissipation in the ITM System during 17-24 April 2002, *Conference on Sun-Earth Connection: Multiscale Coupling in Sun-Earth Processes*, Kona, Hawaii, February, 2004. **Invited**.
- I31. Mlynczak, M., F. Martin-Torres, C. Mertens, M. Lopez-Puertas, J. M. Russell, J. Winick, R. Picard, and L. Gordley, Elements of the energy budget of the mesosphere as revealed by the SABER experiment, *Fall Meeting, American Geophysical Union*, San Francisco, December. 2003. **Invited**.
- I30. Kozyra, J. U., L. J. Paxton, J. Yee, C. Cattell, A. Coster, D. S. Evans, X. Fang, J. C. Foster, R. A. Heelis, T. Immel, C. H. Jackman, H. Kil, A. Komjathy, A. Mannucci, S. B. Mende, T. E. Moore, M. G. Mlynczak, E. E. Remsberg, J. M. Russell, J. B. Sigwarth, S. C. Solomon, S. Su, J. P. Thayer, M. F. Thomsen, B. Tsurutani, A. P. Van Eyken, T. N. Woods, and Q. Wu, Ionospheric and atmospheric effects of a series of major flares and fast coronal mass ejections in late October 2003, *Fall Meeting, American Geophysical Union*, San Francisco, December. 2003. **Invited**.

- I29. Mlynczak, M. G., The Far-Infrared Spectroscopy of the Troposphere (FIRST) Experiment, IGARSS Symposium on Remote Sensing, Toulouse, France, July 2003, **Invited**
- I28. Mlynczak, M. G., The energy budget of the mesosphere as revealed by the SABER experiment, IUGG Symposium, Sapporo, Japan, July 2003, **Invited**
- I27. Forbes, J.M. ; Russell, J.; Zhang, X.; Miyahara, S.; Palo, S. ; Miyoshi, Y.; Mlynczak, M.; Mertens, C.J.; Garcia, R. Nonmigrating tides as measured by the SABER instrument on TIMED during April-May, 2002, *EGS-AGU-EUG Joint Assembly*, Nice, France, April 2003. **Invited.**
- I26. Winick, J. R.; Mlynczak, M. G.; Wintersteiner, P. P.; Martin-Torres, F.-J.; Picard, R. H.; Paxton, L.; Lopez-Puertas, M. ; Russell III, J. M.; Christensen, A.; Gordley, L. Analysis of the energy input and loss in the thermosphere during the April 2002 geomagnetic storm using SABER infrared limb emission and GUVI limb emission, *EGS-AGU-EUG Joint Assembly*, Nice, France, April 2003. **Invited.**
- I25. Mlynczak, M. G., et al., Energy balance in the Sun-Earth system during the solar storm events of April, 2002, Fall Meeting, American Geophysical Union, San Francisco, CA, December, 2002, **Invited**
- I24. Mlynczak, M. G., Chemical Kinetics and the Flow of Energy in the Upper Atmosphere, Fall Meeting, American Geophysical Union, San Francisco, CA, December, 2002, **Invited**
- I23. Russell, J. M., M. G. Mlynczak, L. L. Gordley, C. J. Mertens, R. Picard, M. Lopez-Puertas, D. E. Siskind, D. Baker, J. Ulwick, E. E. Remsberg, J. Winick, P. Wintersteiner, P. Espy, R. Garcia, R. G. Roble, and S. Solomon, An overview and science results from the SABER experiment on the TIMED satellite, *Fall Meeting, American Geophysical Union*, San Francisco, CA, December 2002, **Invited.**
- I22. Russell, James M., M. Mlynczak, L. Gordley, et al., An overview and science results from the SABER experiment on the TIMED satellite, *12th Conference on the Middle Atmosphere, American Meteorological Society*, Houston, TX, November 2002. **Invited.**
- I21. Mlynczak, M. G., J. Martin-Torres, C. J. Mertens, M. Lopez-Puertas, R. Picard, J. Winick, P. Wintersteiner, J. M. Russell, and L. Gordley, A first look at the energy budget of the mesosphere and lower thermosphere as revealed by the SABER experiment on the TIMED mission, *Western Pacific Geophysics Meeting, American Geophysical Union*, Wellington New Zealand, July, 2002, **Invited.**
- I20. Mlynczak, M. G., Modeling and Observations of the Atmospheric Thermal Structure, Chemical Composition, and Radiation Balance using WACCM and Satellite Data Whole Atmosphere Community Climate Model Symposium and Workshop, Boulder, CO, June, 2002, **Invited**

- I19. Mlynczak, M. G., Detecting Trends in Temperature, Species Concentration, And Energy Balance in the Mesosphere from Space, HERAEUS Conference on Atmospheric Trends, Kuhlungsborn, Germany, May 2002, **Invited**
- I18. Kozyra, J. U., M. W. Liemohn, M. G. Mlynczak, L. J. Paxton, W. R. Skinner, D. N. Baker, C. A. Cattell, G. A. Germany, S. B. Mende, and C. J. Pollock, TIMED Observations of the signatures of magnetic activity in the MLTI region placed into global context by ACE, POLAR, IMAGE, SAMPEX, FAST, NOAA/POES, and DMSP, *Spring Meeting, American Geophysical Union*, Washington, DC, May 2002, **Invited**.
- I17. Russell, J. M., M. G. Mlynczak, L. L. Gordley, C. J. Mertens, R. H. Picard, M. Lopez-Puertas, P. Wintersteiner, J. Winick, D. E. Siskind, D. Baker, J. Ulwick, E. E. Remsberg, R. Garcia, P. J. Espy, R. G. Roble, and S. Solomon, The SABER Experiment on the TIMED mission: Overview and Preliminary Science Results, *Spring Meeting, American Geophysical Union*, Washington, DC, May 2002, **Invited**.
- I16. Mlynczak, M. G., The SABER experiment: an in-depth probe of the non-LTE environment, SPIE 8th International Symposium on Remote Sensing, Toulouse, France, September, 2001, **Invited**
- I15. Mlynczak, M. G., and R. G. Roble, Observations of the atmospheric energy budget from the edge of space to the surface of the Earth, International Association of Meteorology and Atmospheric Science General Assembly, Innsbruck Austria, July, 2001, **Invited**
- I14. Barker, J. R., R. M. Shroll, L.L. Lohr, and M. G. Mlynczak, State-to-state rate constants for non-LTE analysis, *Spring Meeting, American Geophysical Union*, Washington DC, May, 2000. **Invited**.
- I13. Mlynczak, M. G., Deriving the mesospheric energy balance from space observations, Planetary Scale Mesopause Observing System Workshop 2000, Toronto, Canada, May, 2000, **Invited**
- I12. Mlynczak, M. G., Mesospheric solar energy deposition rates as derived directly from airglow observations, IUGG 1999, Birmingham, UK, July 1999, **Invited**
- I11. Mlynczak, M. G., A contemporary assessment of the mesospheric energy budget, AGU Chapman Conference on Science Across the Stratopause, Annapolis, MD, April, 1999, **Invited Tutorial**
- I10. Mlynczak, M. G., An updated assessment of the mesospheric heat budget, Special Session on Mesospheric Inversion Layers, Fall Meeting, American Geophysical Union, San Francisco, December, 1998, **Invited**
- I9. Mlynczak, M. G., Upper atmosphere energetics derived from airglow observations, XXV Annual European Meeting on Atmospheric Studies by Optical Methods, Granada, Spain, Sept. 1998, **Invited**

- I8. Mlynczak, M. G., Energetics of the Middle Atmosphere and Lower Thermosphere, 31st Assembly, Committee on Space Research (COSPAR), Birmingham, England, July, 1996, **Invited**
- I7. Mlynczak, M. G., Energetics of the middle atmosphere: Theory and observational requirements, presented at the 1994 COSPAR meeting, Hamburg, Germany, July, 1994. **Invited**
- I6. Russell, J. M., and M. G. Mlynczak, HALOE observations from the UARS platform and scientific implications, presented at the 1994 COSPAR meeting, Hamburg, Germany, July, 1994. **Invited**
- I5. Mlynczak, M. G., Coupled energetics, chemistry, and dynamics of the mesosphere, presented at the 1994 CEDAR Annual Meeting, Boulder, CO, June, 1994. **Invited Tutorial**
- I4. Mlynczak, M. G., Some questions concerning the utility of the oxygen dayglow as a proxy for ozone, presented to the Chemical Physics in the Atmospheric Sciences Workshop, Telluride, CO, August, 1993. **Invited**
- I3. Mlynczak, M. G., The role of chemical heating in the middle atmosphere, presented at the AGU Chapman Conference on the Upper Mesosphere and Lower Thermosphere, Asilomar, CA, Nov., 1992, **Invited Tutorial**
- I2. Mlynczak, M. G., Chemical kinetic requirements for modeling the terrestrial non-LTE environment, presented at the Chemical Physics in the Atmospheric Sciences Workshop, Telluride, CO, August, 1992. **Invited**
- I1. Mlynczak, M. G., Solar and Chemical reaction induced heating in the terrestrial mesosphere and lower thermosphere, presented at the 8th Conference on the Middle Atmosphere, Atlanta, GA January, 1992. **Invited**